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A STUDY OF RETARDATION AND CLASS STANDING ON THE BASIS OF HOME LANGUAGE USED BY PUPILS

EVERETT EVELETH CAMPBELL
American Mission, Sialkot, India

Does the use of some foreign vernacular as the home language of pupils have any causal connection with their acceleration or retardation in our public schools, or with their relative standing in the classroom?

The extent of the problem which is presented in this question is measured, on the one hand, by the exceedingly large foreign-speaking population which we have come to have in America, especially in our cities, and, on the other hand, by the heavy percentage of retardation that prevails in our schools. To cause this retardation many factors are operating. Whether or not the use of a foreign language in the home is one of these is the subject considered in this investigation.

The percentage of the foreign element is indicated by the tables given in the United States Census Reports of 1910, showing that of the 91,972,256 inhabitants in the continental United States, 14.7 per cent are foreign born, while 20.6 per cent more have foreign-born parents. In distribution throughout the states the percentages vary from 2.4 per cent of foreign born in the South Atlantic Division, and 2.6 per cent in the South Central Division, to 15.6 per cent in the North Central Division, 19 per cent in the Western Division, and 25.6 per cent in the North Atlantic Division. Those with foreign-born parents vary from 3.6 per cent in the South Atlantic Division, and 4.8 per cent in the South Central Division, to 24.5 per cent in the Western Division, 27.8 per cent in the North Central Division, and 29.5 per cent in the North Atlantic Division.

Within these various divisions a few of the typical states vary as follows:

TABLE I

	Percentage Foreign Born	Percentage Foreign Parents
Massachusetts.....	31.2	34.8
New York.....	33.0	29.9
Illinois.....	21.3	30.6
Wisconsin.....	22.0	44.0
California.....	21.8	26.7
North Carolina.....	0.3	0.7
Indiana.....	5.9	13.0

These figures indicate a wide variation, yet in a majority of the states the percentages are high. In many of them from one-half to two-thirds of the people are either foreign born themselves or have foreign-born parents. In our large cities, where the population is densest, this condition is most pronounced.

When we turn our attention to retardation in the schools we find figures that are equally striking. In *Bulletin No. 5, 1911*, of the United States Bureau of Education, prepared by Dr. Strayer, of Teachers College, New York, tables are presented showing the results of an investigation in 318 cities. Counting children six or seven years old in Grade I as of normal age, seven or eight in Grade II, eight or nine in Grade III, and so on, the tables give the following percentages:

TABLE II

NORMAL AGE	OVER AGE					UNDER AGE	
	1 Yr.	2 Yrs.	3 Yrs.	4 Yrs. and Over	Total		
Chicago boys.....	61.7	19.9	9.7	3.8	2.2	35.6	2.7
" girls.....	66.8	18.1	7.6	2.7	1.4	29.8	3.4
Indianapolis boys.....	63.5	20.0	9.5	2.3	2.1	33.9	2.6
" girls.....	65.9	18.2	8.7	2.9	1.0	30.8	3.3
Philadelphia boys.....	53.6	21.9	12.5	6.2	3.6	44.2	2.2
" girls.....	57.2	21.1	11.7	5.0	2.5	40.3	2.5

The variation in the percentage of those entered as of normal age extends from Savannah, Ga., (colored) boys 25.6 per cent, girls 25.8 per cent; Houston, Tex., boys 25.8 per cent, girls 30.5 per cent; and Erie, Pa., boys 38.9 per cent, girls 46.3 per cent,

up to Aurora, Ill., boys 73.7 per cent, girls 76.1 per cent. The variation in the enrolment of under-age pupils extends from boys 0.3 per cent, girls 0.2 per cent, in Birmingham, Ala. (Columbia, S.C., is reported blank), to boys 35.7 per cent, girls 39.4 per cent, in Haverhill, Mass.

For cities with a population of less than 25,000 the figures are similar.

Here again, just as in the tables presented above giving the foreign element percentages, there is a wide range of variation, yet a condition that is widespread, pronounced, and serious.

Other investigations, more limited in extent, and varying somewhat in method, but made with equal care, have netted approximately the same results.

This present study to discover whether the first of these conditions, viz., the presence of a large foreign-born and foreign-speaking element in our population, has an active influence in producing the second condition, is not the first that has been made. Many educators have suggested that such a relationship exists, and have been desirous of ascertaining the actual facts. Dr. Leonard P. Ayres conducted in New York City an investigation of 20,000 children in fifteen schools. The results were negative. These he sums up in his *Laggards in Our Schools*, and also refers to the experience of the department of education in Porto Rico in changing its schools from the Spanish to the English basis with little or no loss of time on the part of pupils, and again to the investigation conducted by Superintendent James E. Bryan, of Camden, N.J. This last also gave negative results.

So far as known to the writer, however, no extended investigation has been made in Chicago or anywhere in the North Central Division, though the percentages given above indicate that the two factors are as acute here as elsewhere. Nor can it be questioned that the problem is of sufficient importance to warrant the gathering and considering of more extensive data than we have yet had before conclusions can be reached that may be called final.

Further, it appears that the preceding investigations, notably that of Dr. Ayres, have been based on differences in *nationality*. This is not identical with difference in language. Many Germans

use English exclusively in their homes while still entered in school registers as German in their nationality. The same is true of immigrants from all other countries. The present study undertakes to differentiate on the basis of the language used by pupils as their home language.

METHOD OF INVESTIGATION

The method followed has been:

1. On printed cards, as shown here, the individual records of over 3,000 pupils have been entered. These have been secured by copying them carefully from the school registers and enrolment cards in seven different schools widely scattered in the city of Chicago.

School.....	Room.....
Pupil's name.....	
Language.....	
Date of birth.....	
Home conditions.....	
Age entering this school.....	
Grade.....	
Date of entering grade.....	Age.....
Half-years below grade.....	Age.....
Half-years above grade.....	Age.....
Mentality.....	Interest.....
Remarks.....	Industry.....
	Scholarship.....

2. By arrangement with the principals the pupils were given blank slips on which they were asked to write their names and the home language used. With the envelope in which the blank slips were handed to the teachers, or more frequently sent to them by the principal from his office, the following directions were given:

Please have each pupil enter on one of the inclosed slips:

- (1) Name.
- (2) Language ordinarily used at home *with parents*.

Please emphasize that it is the language used with parents, or those with whom the pupils live, that is to be given, since many use English with brothers and sisters and playmates, who use some foreign language with their parents.

Kindly check over the slips to see that the answers given agree with your own knowledge of the facts.

3. The language entry was then transferred from the pupils' slips to the corresponding printed cards on which the register records had been entered.

This use of two separate sets of cards with the transfer of entries involved much extra work, but it was felt that it was necessary in order to avoid the distribution of the full printed cards in the schools, with the consequent danger of pupils objecting to such a laboratory study. Principals and teachers might well object to this. No such objection holds against the method used.

4. For the children of the lower grades, who could not be expected to fill out their own slips, the method followed was to enter the nationality of each pupil on the cards, together with the other entries from the school enrolment cards, and then have the principal send these to the teachers with the accompanying request:

Will you kindly check "Language," as entered on inclosed slips, and make corrections as necessary? The entry made is the nationality of father and mother as shown by the record cards, and may or may not indicate the language spoken. Some pupils speak English with brothers and sisters but a foreign language with parents or guardians. It is this latter that is wanted if it can be given.

5. Extensions were made on the cards which were then arranged by grades, and these subdivided into language groups, and the number in each entered in the tables of frequencies which present the data used in this study, and on the basis of which its conclusions are reached. It was found that the enrolment card entries for "above grade" and "below grade" could not be used on account of inaccuracies and variations in method of computation, so only age was entered as an extension on the cards. Acceleration and retardation were computed in the frequency tables. The blanks on the cards for "mentality," "industry," and "interest" were inserted to correspond with the enrolment card entries in Schools A and B. No use of them has been made in these tables. In the registers of the other five schools there were no corresponding entries.

6. In computing ages the nearest half-year has been taken.

7. In computing acceleration and retardation the usual method is to count all six- and seven-year-old children as normally graded when in Grade I, seven- and eight-year-old children as normally graded when in Grade II, and so on. But for the purposes of comparison between various groups within each grade, this two-year range of variation is too wide. Accordingly an arbitrary standard has been established, and children of all groups have been measured by this. Those of age six have been considered normal only in

Grade I, of age seven, only in Grade II, of age eight, only in Grade III, and so on up to Grade VIII, in which only those of age thirteen have been counted as normal.

As in computing ages the nearest half-year has been taken, it follows that acceleration and retardation have been figured on the same basis.

Certain difficulties encountered in securing accurate data need to be noted:

1. Register and enrolment card records are often incomplete. The date of original entry into the school can usually be found on the enrolment cards where this system is used, but not in the register, where the register system is used, except by a hopelessly interminable tracing-back to the year when the pupil first entered, and then back a year or two farther to find a time when he was not present.

For some schools, moreover, up until within the last four or five years, the grades of pupils were not entered in the register, but only the number of their room. The grade now in this room may or may not indicate the grade that was in the room five years ago. These conditions prevent an investigator from tracing individual pupils and basing his conclusions on their progress through the grades.

2. The forms in which records are kept are dissimilar. In five of the seven schools studied there are registers. In two there are enrolment cards, filed in card catalogue system. The register entries give the number of the pupil's room, his father or guardian's name, his birthplace, age, age entering grade, grade, weeks in grade, and promotion, with one or two other columns giving information not germane to this study. The column headed "Promotion" is ordinarily not filled in.

The enrolment card entries include all that is given above, together with nationality of father and mother, home conditions, school from which received, or certification when dismissed, original date of entering the school, half-years below grade, half-years above grade, and columns for entering letters to indicate mentality, interest, industry, scholarship, etc. Much of the material, then, that might be secured from the enrolment cards cannot be secured from the registers.

The dissimilar nature of the records is found again in the variation in methods of making entries that obtain in different schools, or among different persons in the same school.

3. The nomadic character of the population is an added difficulty that renders a study of the progress of individual pupils very unsatisfactory. Often children are moved from one district to another several times during their years in school.

4. Variation between given names entered in the register and those written by the pupils prevented the completion of some cards. Absences, too, left many cards without language entries, while promotions during the year without corresponding changes in the room numbers on the register made the finding of corresponding slips in large numbers of cases exceedingly tedious.

These difficulties have been overcome by the adjustment of method to suit the available data. The ages and languages of pupils now enrolled in each grade have been considered rather than the progress of individual pupils through the grades, and cards on which the data are incomplete have been rejected.

5. A still more important consideration remains, however, in the problem of singling out this factor of language and dissociating other factors from it. Racial differences, individual differences, and social and economic conditions are so intimately connected with language that a complete separation is scarcely possible. Approximately to eliminate them the study has been carried on in districts where, with possibly one exception, similar social and economic conditions prevail. Wealthy residential sections of the city have not been included. Nor have schools in which English-speaking children largely predominate been compared with schools in which foreign-speaking children predominate. Moreover, the foreign-speaking pupils have been segregated in their own national groups and these, as well as the totals, have been compared with English-speaking pupils in the same school. Finally, the totals of each group in all the schools have been combined for the purpose of deducing more general conclusions.

The enrolment and the number of grades studied in the various schools are shown in the following table, together with the number of foreign-speaking and English-speaking pupils:

TABLE III

School	Total Attendance	Grades for Which Data Were Secured	Foreign Pupils	English-Speaking Pupils
A.....	897	I-VIII	545	197
B.....	829	III, V, VIII	155	140
C.....	500	III-VIII	.....	.....
D.....	1,903	III-VIII	586	75
E.....	1,614	III-VIII	556	163
F.....	520	II-VIII	112	89
G.....	1,151	III, V, VIII	125	193
			2,113	900
Total pupils.....			3,013	

In School A and School B it was possible to determine the nationality of the pupils from the enrolment cards. A comparison between nationality and home language for 881 pupils of other nationality than those for whom English is the mother-tongue shows 677, or 77 per cent, using their foreign vernaculars; 167, or 19 per cent, using English, and 37, or 4 per cent, using both. The complete table is as follows:

TABLE IV

Nationality	Using English	Using Mother-Tongue	Using Both	Total
Austrian.....	.....	I	.....	I
Bohemian.....	I	3	.....	4
Belgian.....	I	.....	.....	I
Danish.....	8	I	2	11
Dutch.....	6	II	I	18
French.....	3	2	.....	5
German.....	50	58	7	115
Hungarian.....	.....	41	I	42
Italian.....	5	82	.....	87
Jewish.....	13	32	I	46
Lithuanian.....	.....	5	.....	5
Norwegian.....	6	4	I	11
Polish.....	II	318	5	334
Russian.....	.....	5	I	6
Servian.....	.....	I	.....	I
Slavish.....	I	46	I	48
Swedish.....	62	66	I2	140
Yiddish.....	.....	I	3	4
Welsh.....	.....	.....	2	2
	167	677	37	881

Of the Germans, Swedes, Danes, and Norwegians, a large percentage use English; of the Poles, Hungarians, Italians, and Slavs, a low percentage.

EXPLANATION OF TABLES AND CHARTS

In the first column are given the half-years of age for pupils in each grade; in the second column, the half-years under age (marked $-$), and over age (marked $+$), measured from the arbitrary standard of six for Grade I, seven for Grade II, and so on. In the third column (marked A) is given the number of pupils of the language indicated at the head of the column for each half-year of acceleration or retardation. In the fourth column (marked B) are given the products of columns two and three, with plus and minus signs preserved. Under languages represented by but few pupils the B column is omitted. The algebraic sum of column B divided by the sum of column A gives the average acceleration or retardation per pupil measured in half-years. Below the average the mode in half-years of retardation has also been entered. This indicates the age at which the largest number of pupils are found.

In all cases throughout the tables the average and mode are found in retardation, not in acceleration, since the accelerated pupils, measured from the arbitrary standard, are few.

Subjoined to many of the retardation tables are tables indicating the class standing of pupils in the various language groups. The letters E, G, F, and P stand for excellent, good, fair, and poor. At the bottom of the table the mode for each group is shown.

In preparing the charts percentages have been used for the frequencies instead of absolute figures. The ordinate in all the charts represents frequencies. The abscissa in the retardation charts represents acceleration and retardation in half-years ($+$ and $-$ respectively); in the class-standing charts, it represents relative ranks as indicated by the letters. The figures in parentheses, placed before the names of the various groups, give the number of pupils represented in the curve.

For the purposes of this article only a few of the individual

class tables and charts need be given. The combined class tables, which will be presented in full in the next number, furnish a basis for drawing more general conclusions than could safely be drawn from these of the separate classes.

SCHOOL A

In Grade I of this school (Table V) the Polish pupils are in the majority. Their average retardation falls a little below that of the total foreign group, but is a half-year in excess of the retardation of the English-speaking group. This is indicated by the difference in the mode as well as in the average. In the mode with the English pupils are the Germans, Swedes, and Hungarians. The Slavs fall into the mode of the Poles.

No doubt the prevailing similarity in the tables is due to the fact that age six is the time when most children are started to school, and differentiation in ages and class ranks has not yet been established. In both the graphs prepared for this class (Chart I) the uniformity of the various curves is apparent.

In Grade II the English-speaking group was found to pass above all the others in retardation except the Hungarians. The Jews, with but half a dozen pupils, showed the least. In class standing there was essential similarity, the foreign pupils receiving a larger percentage of G's, and the English pupils more E's.

In the succeeding tables and charts of this school the advantage was decidedly with the English pupils, except in Grade VIII. In that grade the average retardation for them was 2.37 half-years; for the others, it was only 2.0 half-years. The English pupils, however, had two half-years advantage in the mode. Only at one other point were they surpassed in average, viz., by the Swedes in Grade IV, where all the groups, except the Swedish, were abnormally high in their retardation. The Polish children in the class had an average retardation of 6.66 half-years.

Several of the charts, notably those for Grades VI and VIII, showed decided difference in mode in favor of the English children.

CHART I

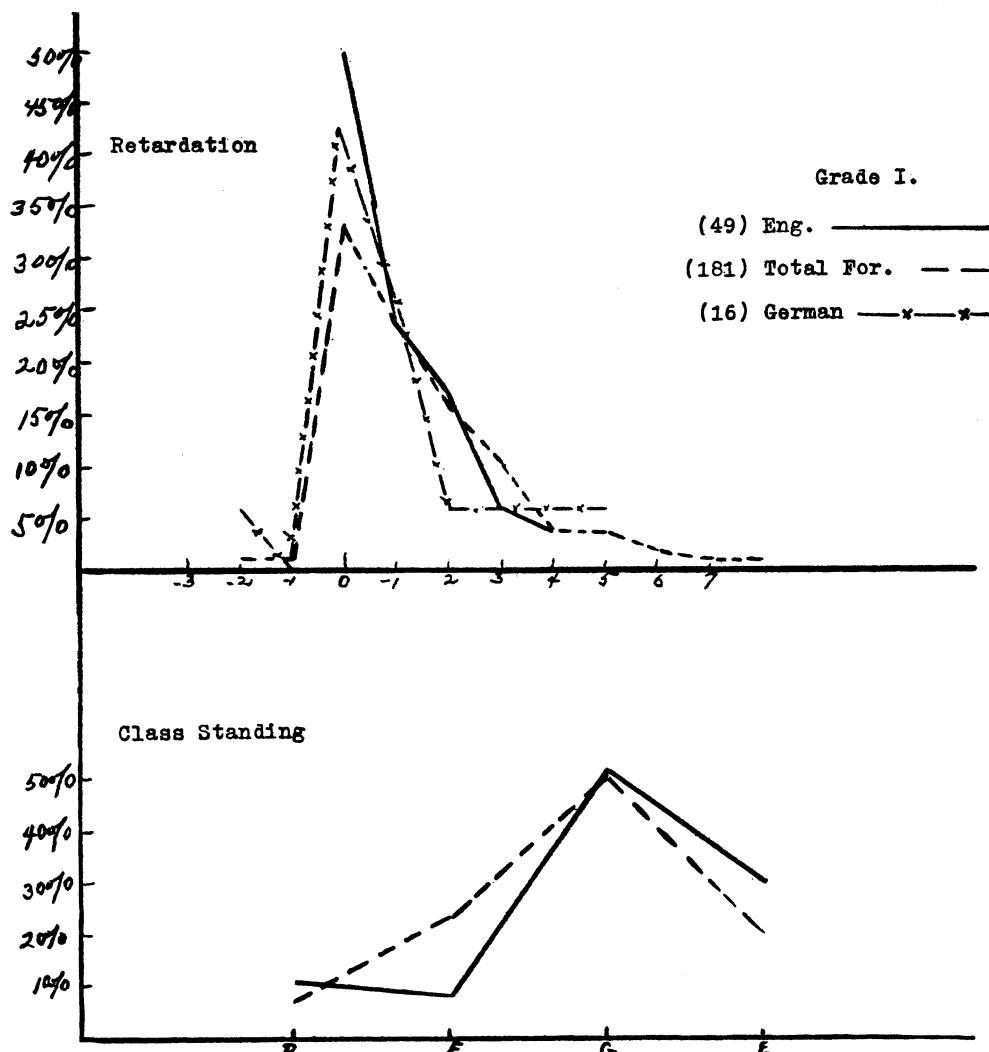


TABLE V
SCHOOL A—GRADE I

AGES	HALF-YEARS UNDER AND OVER AGE	POLISH		GERMAN		SLAVISH		SWEDISH		HUNGARIAN		Misc.	TOTAL FOREIGN		ENGLISH SPEAKING		
		A	B	A	B	A	B	A	B	A	B		A	B	A	B	
	No. of Pupils	Total Half-Years Accel- erated and Retarded															
5....	—2	1	—2	1	—2	...	...	...	...	...	...	...	2	—4	...	...
5½....	—1	2	—2	...	...	...	...	...	...	...	...	...	2	—2	...	...
6....	0	38	...	7	...	2	...	6	...	4	...	3	60	...	24	...	
6½....	+1	34	34	4	4	4	4	...	...	2	2	...	44	44	12	12
7....	+2	22	44	1	2	3	6	2	4	3	6	...	31	62	8	16	
7½....	+3	14	42	1	3	2	6	1	3	1	3	1	20	60	3	9	
8....	+4	4	16	1	4	2	8	1	4	...	...	...	8	32	2	8
8½....	+5	5	25	1	5	1	5	...	...	...	...	1	8	40	...	...
9....	+6	2	12	...	...	...	...	1	6	...	...	...	3	18	...	...
9½....	+7	1	7	...	...	...	...	...	...	...	...	...	1	7	...	...
10½....	+9	...	...	...	...	1	9	...	...	...	...	...	2	18	...	...
Totals		123	176	16	15	38	11	17	10	11	5	181	275	49	45		
Average ret. in half-years....		1.43		1.0		2.53		1.54		1.1				1.52		0.92	
Mode of ret. in half-years....		1		0		1		0		0				1		0	

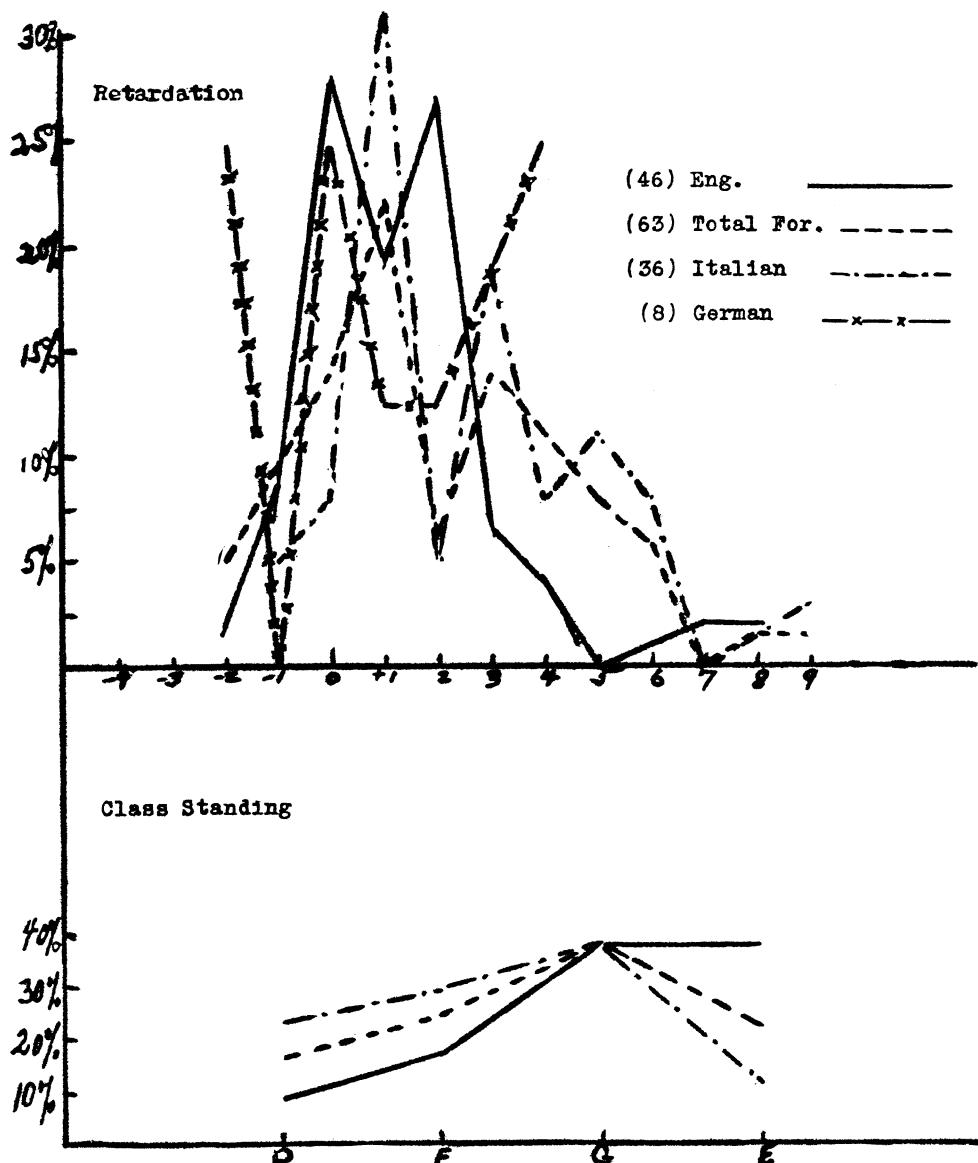
CLASS STANDING

	German	Slavish	Polish	Swedish	Total Foreign	English Speaking
E.....	5	4	17	5	34	15
G.....	5	7	65	2	89	25
F.....	3	1	32	3	40	4
P.....	2	3	6	1	13	5
Mode.....	G	G	G	E	G	G

SCHOOL B

This is a community in which there is a large percentage of Italians. The English group was surpassed by all the others in Grades III and VIII as regards average. In all three of the grades

CHART II



measured it was equal or ahead in mode. As shown by the charts, it was really bi-modal in each case. Chart II shows Grade V.

The heavy elimination of the foreign element in the successively higher grades was shown by the relation between its numbers and those of the English-speaking: in Grade III, 63 of the former to 26 of the latter, in Grade V, 63 to 46, in Grade VIII, 29 to 68. The Swedes and Germans held their own, but the Italians dropped from 36 in V to 9 in VIII.

SCHOOLS G, E, AND D

In each of the three grades investigated in School G the English-speaking pupils were found to have the least average retardation, and in each grade except VIII the lowest mode. In this grade there was a clearly marked difference of one-half year. More Germans were found in this district than in any other; of Italians, Poles, and Hungarians, there were very few; of Swedes, an average number.

School D is in an overwhelmingly Italian section of the city. School E is in an equally overwhelming Jewish section. The averages and modes of the total foreign column, accordingly, are determined entirely by the averages and modes of these two respective groups.

In Grades III and VII of School D only one more pupil was found in the total foreign group than in the Italian. In VIII there were only Italians. In each grade except Grade VI the English-speaking children showed less average retardation than the others. Their mode in this grade showed less, and in each of the others showed the same or less.

In School E some have given Yiddish as their language, but aside from this there are only seven that appear outside of the Jewish or English columns. Those who have entered Yiddish have been included with the Jewish in the final classification. In Grades V and VI the English group proved to be more retarded than the Jewish and Yiddish groups. In Grade IV it was more retarded than the total foreign group. This last differed from the Jewish by but one pupil. As regards mode the English pupils ranked even, or ahead, in each grade. The results for Grade VIII are shown in Table VI and Chart III.

CHART III

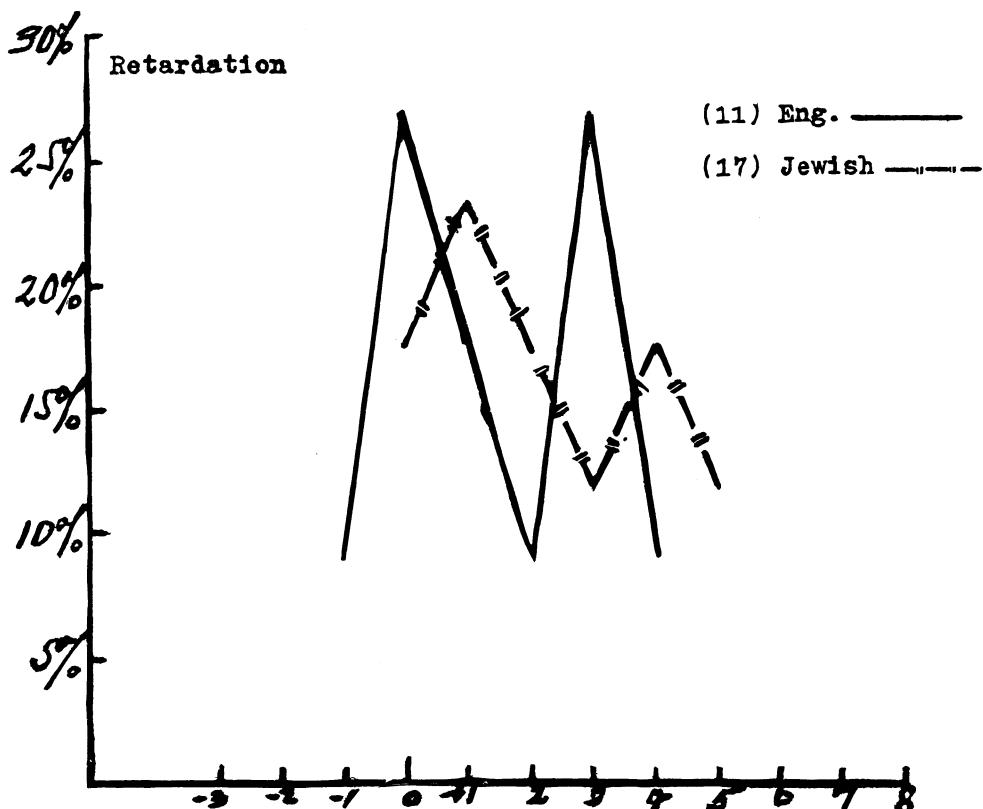


TABLE VI
SCHOOL E—GRADE VIII

AGES	HALF-YEARS UNDER AND OVER AGE	JEWISH		ENGLISH SPEAKING	
		A No. of Pupils	B Total Half-Years Acc. and Ret.	A	B
12 $\frac{1}{2}$...	-1			1	-1
13...	0	3		3	
13 $\frac{1}{2}$...	+1	4	+4	2	+2
14...	+2	3	6	1	2
14 $\frac{1}{2}$...	+3	2	6	3	9
15...	+4	3	12	1	4
15 $\frac{1}{2}$...	+5	2	10		
Totals.....		17	38 2.24 1	11	16 1.45 0
Average retardation					
Mode.....					

SCHOOLS C AND F

These two schools have a majority of their pupils Italians, though many other nationalities are represented. Of School F it may be said in general that irregularity of relative standing was found to be the most characteristic feature. In School C the English-speaking children showed less retardation than the others in each grade except VII. Only twelve cards all told were secured in this class. This is too few for anything approaching accurate comparison.

The following tables and charts will illustrate the conditions that obtain. Table VII and Chart IV represent Grade III in School C and Table VIII and Chart V represent Grade IV in School F.

Throughout the tables and charts of the separate classes in each of the seven schools there has been much variation. In the larger percentage of cases the English-speaking pupils have shown least retardation. There have, however, been a number of marked exceptions. Five times they have been excelled in average by the Italians, once by the Germans, twice by the Swedes, three times by the Jews, once each by the Poles and Slavs, and six times by the total foreign group. In mode many groups have been equal to the English. Twice the Italian and total foreign groups have

TABLE VII
SCHOOL C—GRADE III

AGES	HALF-YEARS UNDER AND OVER AGE	ITALIAN		CHI- NESE	JEWISH	YIDDISH	TOTAL FOREIGN		ENGLISH SPEAKING	
		A No. of Pupils	B Total Half-Years Acc. and Ret.	A	A	A	A	B	A	B
8	I	.....	.....	I	.....	.....	.....
8½	+	I	2	2	.....	.....	2	2	.....	.....
9	+	2	6	12	.....	.....	6	12	3	6
9½	+	3	9	27	.....	I	10	30	2	6
10	+	4	7	28	.....	.....	7	28	3	12
10½	+	5	4	20	.....	.....	I	5	25	2
11	+	6	1	6	.....	I	2	12	12
11½	+	7	4	28	.....	.....	4	28	1	7
12	+	8	I	8	.....	I	8	.....	.....
12½	+	9	2	18	.....	.....	2	18	I
13	+	10	I	10	.....	.....	2	20	9
14	+	12	3	36	.....	3	36	.....	.....
Totals.....		40	195	2	2	I	45	219	14	62
Average ret.....			4.87					4.87		4.43
Mode.....			3					3		4

CHART IV

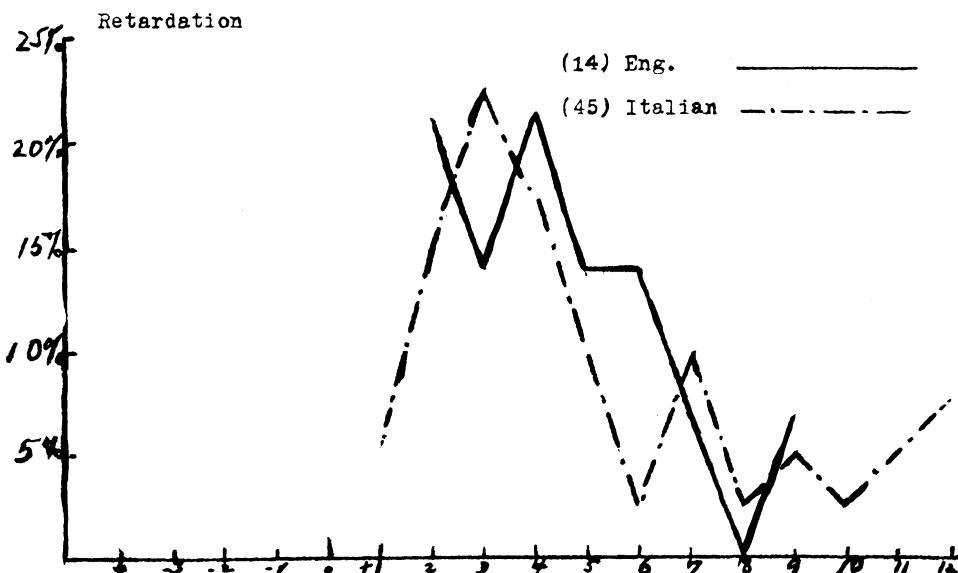


CHART V

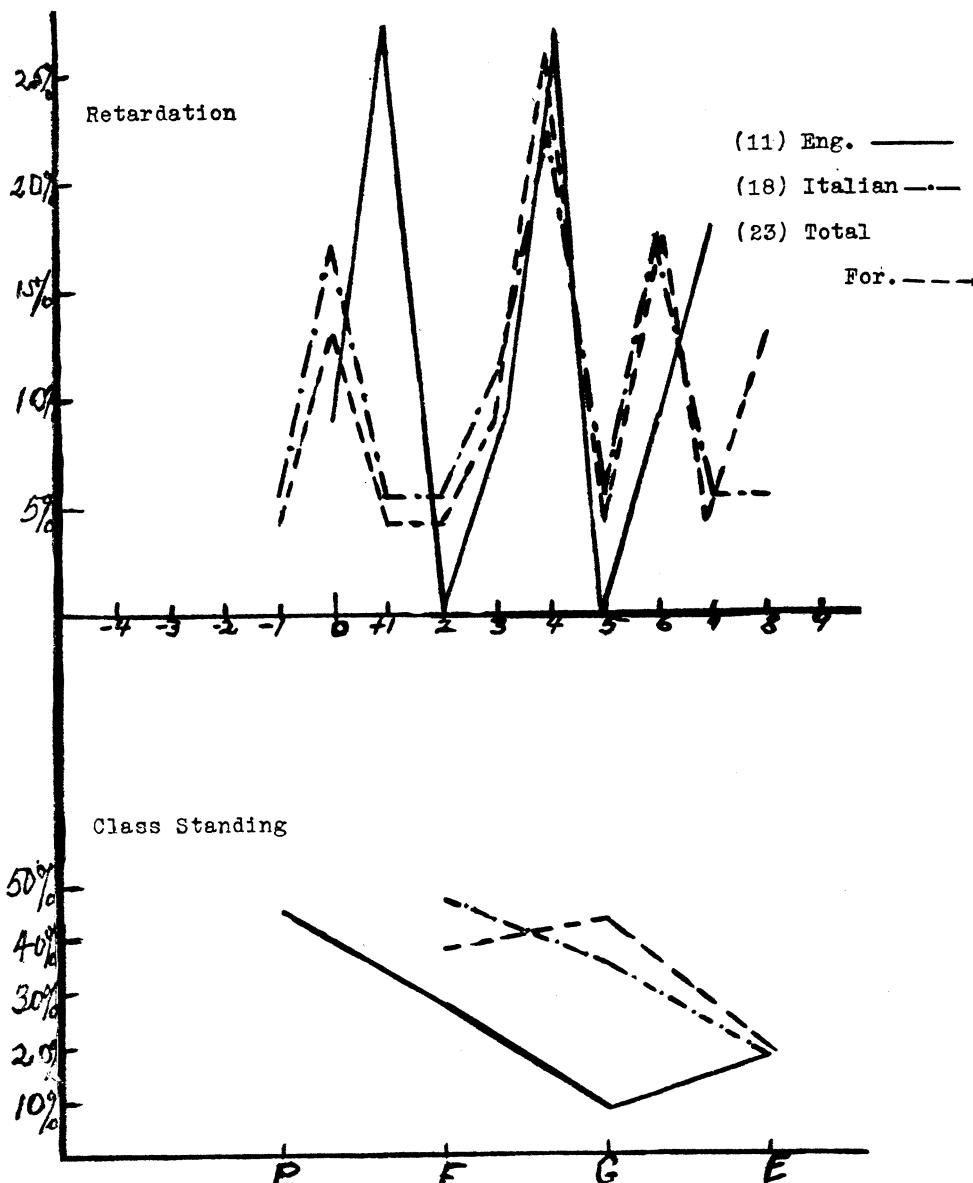


TABLE VIII
SCHOOL F—GRADE IV

AGES	HALF-YEARS UNDER AND OVER AGE	ITALIAN		GREEK	JEWISH	PERSIAN	TOTAL FOREIGN		ENGLISH SPEAKING	
		A	B	A	A	A	A	B	A	B
8 $\frac{1}{2}$	— I	I	— I	.....	.....	.....	I	— I	.....	.....
9.....	3	.....	.....	.....	.....	.....	3	.....	I	.....
9 $\frac{1}{2}$	+ I	I	I	.....	.....	.....	I	+ I	3	+ 3
10.....	+ 2	I	2	.....	.....	.....	I	2	.....	.....
10 $\frac{1}{2}$	+ 3	2	6	.....	.....	.....	2	6	I	3
11.....	+ 4	4	16	I	.....	I	6	24	3	I 2
11 $\frac{1}{2}$	+ 5	I	5	.....	.....	.....	I	5	.....	.....
12.....	+ 6	3	18	.....	I	.....	4	24	I	6
12 $\frac{1}{2}$	+ 7	I	7	.....	.....	.....	I	7	2	I 4
13.....	+ 8	I	8	.....	I	I	3	24	.....	.....
Totals.....		18	62	I	2	2	23	92	II	38
Average ret. in half-years.....			3.44					4		3.45
Mode of ret. in half-years.....			4					4		4

CLASS STANDING

	Italian	Total Foreign	English Speaking
E.....	3	4	2
G.....	6	9	I
F.....	8	8	3
P.....	F	G	5
Mode.....			P

shown a better mode; once the Germans have been ahead. In class standing there has been equal irregularity.

It will be of advantage, therefore, in deducing general conclusions to have the data for the separate classes presented in the form of combined tables and charts. These will be given in the next section of the study.

[To be continued]